



Wildlife Services Seeking Solutions Through Research

United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

**National Wildlife
Research Center**



Reducing Wildlife Damage to Timber, Forest Resources, and Forest Management

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National Wildlife Research Center Scientists Define Solutions to Wildlife, Timber, and Forest Dynamics

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research facility devoted exclusively to resolving conflicts between people and wildlife through the development of effective, selective, and acceptable methods, tools, and techniques. NWRC's field station in Olympia, WA, has the capacity to conduct research on most wildlife associated with forest resource damage.

Wildlife impacts on forest resources can be extensive. For example, attempts to replace trees after a harvest or a fire can be complete



Groups Affected By These Problems:

- Timber producers
- Natural resource managers
- Orchard managers
- Landscapers
- Americans who enjoy forests

Major Research Accomplishments:

- WS demonstrated the impacts on non-target species and the efficacy of baiting forestation sites with cholecalciferol to reduce pocket gopher populations.
- WS demonstrated the nutritional, behavioral, and territorial impacts of feeding black bears supplements to reduce girdling of douglas-fir plantations.
- WS determined the factors impacting the success of Clemson beaver pond levelers installed by WS in Mississippi.
- WS developed methodology to assess beaver populations in the southeast United States.
- WS demonstrated the relative merits of the active ingredients and delivery systems used in deer repellants.

failures because of foraging wildlife. Reforestation efforts are greatly hindered by bears, beavers, deer, elk, mice, mountain beavers, pocket gophers, porcupines, and voles cutting and gnawing on seedlings. Developing nonlethal methods to manage wildlife damage is a priority in the ongoing research conducted at NWRC's Olympia field station. Alternatives to lethal control, including physical deterrents, repellants, frightening devices, habitat and behavior modification, and capture methods are currently being researched and developed.

NWRC scientists are working with timber, forest, and wildlife managers to identify the most significant wildlife damage problems in forested areas. The goal is to develop tools and strategies that minimize wildlife impacts to forest resources, which will decrease the cost of lumber production and enhance plant projects aimed at increasing forest diversity and developing riparian habitats. The research that NWRC is conducting is specifically targeted to find solutions to problems found in the Northwestern and Southeastern forests of the United States.

Applying Science and Expertise to Wildlife Challenges

Wildlife Impacts on Forest Resources—The negative impacts of wildlife on forest resources can be extensive. NWRC biologists are collaborating with forest resource managers to summarize existing data on the economic costs of wildlife damage and update these costs to current-day values. A prior evaluation estimated that on average 30 percent of planted tree seedlings would succumb to animal damage within 5 years if no preventative practices were implemented. Another study indicated that the survival rate for seedlings planted on unprotected sites was 25 percent lower than the survival rate of seedlings planted on similar but protected sites. The trees in protected sites were also 33 percent taller than unprotected trees.

Using present-day values, these losses would result in annual financial losses of \$333 million in Oregon alone. As trees mature, they become vulnerable to a new host of wildlife species. For example, bears generally do not forage on trees less than 15 years old. Current management practices to reduce bear damage cost an additional \$11.5 million. The alternative, however, is far more expensive. The total predicted reduction in the value of Oregon's forest assets would be \$8.3 billion in the absence of a wildlife damage management program.

Dietary Behaviors—NWRC researchers are working to determine how select wildlife species respond to chemical components in foods. Based on this information, NWRC researchers are attempting to modify the feeding behaviors of these animals to reduce damage to forest resources. Repellants, reproductive inhibitors, frightening devices, and physical barriers are all being tested as a means to alter feeding behaviors and reduce damage.

Assessing New Methods for Related Applications—NWRC scientists are consistently asked to provide wildlife management tools that will allow wildlife populations to live in harmony with forest management objectives. Results of ongoing research will provide new methods for protecting forest resources, such as riparian areas and hydraulic structures, and preventing horticultural damage.

Selected Publications:

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- Partridge, S.T., D.L. Nolte, G.J. Ziegler, and C.T. Robbins. 2001. Impacts of supplemental feeding on the nutritional ecology of black bears. *Journal of Wildlife Management* 65:191-199.
- Nolte, D.L., L.A. Shipley, and K.K. Wagner. 2001. Efficacy of wolfen to repel black-tailed deer. *Western Journal of Applied Forestry* 16:182-186.
- Nolte, D.L. and K.K. Wagner. 2001. Non-target impacts of strychnine baiting to reduce pocket gopher populations on forest lands in the United States. Pages 59-71. Pelz, H.J., D.P. Cowan, and C.J. Feare (eds.), *Advances in Vertebrate Pest Management II*. Furth: Filander Verlag.
- Nolte, D.L., S.R. Swafford, and C.A. Sloan. 2001. Survey of factors affecting the success of Clemson beaver pond levelers installed in Mississippi by Wildlife Services. *The Ninth Wildlife Damage Management Conference* 9:120-126.
- Wagner, K.K., and D.L. Nolte. 2001. Comparison of active ingredients and delivery systems in deer repellents. *Wildlife Society Bulletin*. 29:322-330